Permit Fact Sheet

General Information

Permit Number:	WI-0020842-09-1	
Permittee Name:	Freedom Sanitary District No. 1	
Address:	N4229 Garvey Ave (Freedom)	
City/State/Zip:	Kaukauna WI 54130-7138	
Discharge Location:	NW1/4, SW1/4, Sec 11, T22N, R18E, Tn of Freedom, Outagamie Co	
Receiving Water:	Duck Creek, Lower Fox River Basin, Duck Creek Watershed (LF 05)	
StreamFlow ($Q_{7,10}$):	0 cfs	
Stream Classification:	Limited Forage Fishery, not used as a public water supply (See 8. Other Comments below)	
Design Flow	Annual Average	0.402 MGD
Significant Industrial Loading?	No significant industrial contributors discharge to the facility.	
Operator at Proper Grade?	Under NR 114, upon a change in a wastewater treatment plant's level of operations from basic to advanced, the operator−in−charge shall have 36 months to obtain advanced certification, provided the person is making earnest efforts towards advanced certification and that the treatment plant is in compliance with all terms and conditions of its WPDES permit.	
Approved Pretreatment Program?	NA	

Facility Description

The Freedom Sanitary District#1(SD) located in eastern Outagamie County, owns and operates a basic-secondary wastewater facility which was reconstructed in 1997 and upgraded in 2019 (NW1/4, SW1/4, Sec.11, T22N, R18E, Tn of Freedom). The facility has an annual average wet weather design flow of 0.402 million gallons per day (MGD) and an annual average design biochemical oxygen demand (BOD) of 551 pounds per day. The treatment facility includes; a new package septage receiving station unit in a new structure on-site, which will provide preliminary treatment of wastewater from haulers. The septage receiving station empties into a raw wastewater pump station, followed by a preliminary mechanical fine-screen for removal of floatable solids. Next are three anoxic selector tanks to aid biological phosphorus removal, followed by three extended aeration activated sludge basins, which biologically remove dissolved organic material (BOD). The two final clarifiers provide settling and removal of the biomass material formed in the activated basins. Final effluent then passes through the effluent Parshall flume for flow measurement and then into an outfall sewer. This outfall sewer flows 300 feet and discharges through outfall 001 at the east bank of Duck Creek. The Creek is classified as a Limited Forage Fishery, located in the Duck Creek Watershed (LF05) of the Lower Fox River Basin. Waste activated sludge is stabilized through removal of volatile solids in one of four, aerobic digestors, prior to discharge to the onsite sludge storage tank. Stored sludge is ultimately recycled through land application. Ferric sulfate is added as a supplemental aid to remove phosphorus and meet the 1.0 mg/l effluent limit.

In February 2020, the Sanitary District completed a construction project that was started in October 2018 to improve biological and chemical phosphorus removal, upgrade equipment nearing the end of its service life, improve overall treatment processes, and optimize operations. These upgrades focused on providing the Sanitary District with the means

to efficiently control plant processes to comply with the final phosphorus WQBEL. Monitoring probes were added, and treatment equipment was upgraded to allow the WWTP to adjust operations based on fluctuating wastewater conditions. With these improvements, the Sanitary District can now use biological phosphorus removal as the primary phosphorus removal mechanism. Prior to the upgrades, the WWTP exclusively achieved phosphorus removal via ferric sulfate addition. Going forward, biological phosphorus removal is intended to be the primary method of phosphorus reduction with supplemental ferric sulfate addition, if needed.

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701		Influent - Representative samples shall be collected from the influent channel prior to the inclined mechanical screen.
001		Effluent - Representative samples shall be collected after the final clarifier at the effluent box.
004		

1 Influent - Proposed Monitoring

Sample Point Number: 701- Influent

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	2/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total		mg/L	2/Week	24-Hr Flow Prop Comp	

Changes from Previous Permit:

No changes.

2 Surface Water - Proposed Monitoring and Limitations

Sample Point Number: 001- Effluent

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
BOD5, Total	Daily Max	30 mg/L	2/Week	24-Hr Flow Prop Comp	
BOD5, Total	Monthly Avg	15 mg/L	2/Week	24-Hr Flow Prop Comp	
Suspended Solids, Total	Daily Max	30 mg/L	2/Week	24-Hr Flow Prop Comp	This is an interim limit. The final effluent limit will be 25 lbs/day as a monthly average and 46 lbs/day as a weekly average; See Section 4.3 for compliance schedule
Suspended Solids, Total	Monthly Avg	20 mg/L	2/Week	24-Hr Flow Prop Comp	This is an interim limit. The final effluent limit will be 25 lbs/day as a monthly average and 46 lbs/day as a weekly average; See Section 4.3 for compliance schedule
Dissolved Oxygen	Daily Min	4.0 mg/L	5/Week	Grab	
pH Field	Daily Max	9.0 su	5/Week	Grab	
pH Field	Daily Min	6.0 su	5/Week	Grab	
Phosphorus, Total	Monthly Avg	1.0 mg/L	2/Week	24-Hr Flow Prop Comp	This is an interim limit. The final effluent limit will be 2.0 lbs/day as a monthly average. See also Sections 2.2.1.5, 2.2.1.6, 2.2.1.7, and 2.2.1.9.
Phosphorus, Total		lbs/day	2/Week	Calculated	Monitoring only until limits become effective per the schedule in Section 4.2; See also Sections 2.2.1.5, 2.2.1.6, 2.2.1.7, and 2.2.1.9.
Nitrogen, Ammonia (NH3-N) Total	Daily Max	14 mg/L	2/Week	24-Hr Flow Prop Comp	Applies November - April each year
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	10 mg/L	2/Week	24-Hr Flow Prop Comp	Applies November - April each year
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	4.4 mg/L	2/Week	24-Hr Flow Prop Comp	Applies April - May each year
Nitrogen, Ammonia (NH3-N) Total	Weekly Avg	3.0 mg/L	2/Week	24-Hr Flow Prop Comp	Applies June - October each year

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	4.1 mg/L	2/Week	24-Hr Flow Prop Comp	Applies November - April each year
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	1.8 mg/L	2/Week	24-Hr Flow Prop Comp	Applies April - May each year
Nitrogen, Ammonia (NH3-N) Total	Monthly Avg	1.2 mg/L	2/Week	24-Hr Flow Prop Comp	Applies June - October each year
Chronic WET		TUc	See Listed Qtr(s)	24-Hr Flow Prop Comp	See Section 2.2.1.7 for WET testing requirements and schedule.
Temperature Maximum		deg F	Weekly	Grab	Monitoring only October through December.

Changes from Previous Permit

Temperature limits have been removed. Temperature monitoring required at a weekly frequency from October through December.

Explanation of Limits and Monitoring Requirements

Temperature

The facility submitted a Dissipative Cooling study for department review. The Department determined that weekly average effluent limitations for temperature are not necessary based on dissipative cooling, therefore the Department shall modify the permit to remove the weekly average effluent limitations pursuant to s. NR 106.59(4)(e). Weekly monitoring shall be conducted October-December 2021.

3 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
004	B	Liquid	Fecal Coliform	Injection	Land Application	80 dry tons/year
Does sludge management demonstrate compliance? **Yes**						
Is additional sludge storage required? **No**						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? **No**						
Is a priority pollutant scan required? **No** Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD						

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

Sample Point Number: 004- Liquid Sludge

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Annual	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Annual	Composite	
Cadmium Dry Wt	Ceiling	85 mg/kg	Annual	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Annual	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Annual	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Annual	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Annual	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Annual	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Annual	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Annual	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Annual	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Annual	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Annual	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Annual	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Annual	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Annual	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Annual	Composite	
Nitrogen, Total Kjeldahl		Percent	Annual	Composite	
Nitrogen, Ammonium (NH4-N) Total		Percent	Annual	Composite	
Phosphorus, Total		Percent	Annual	Composite	
Phosphorus, Water Extractable		% of Tot P	Annual	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Potassium, Total Recoverable		Percent	Annual	Composite	
PCB Total Dry Wt		mg/kg	Once	Composite	Analysis required in 2018. See Sections 3.2.1.3 and 5.5.6 for monitoring requirements.

Changes from Previous Permit:

No changes

4 Compliance Schedules

4.1 Phosphorus Compliance Schedule

Required Action	Due Date
Operational Evaluation Report: The permittee shall prepare an operational evaluation study report and submit it for Department approval. The report shall evaluate collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that would enable compliance with the final phosphorus WQBEL (water quality based effluent limit) or some improved level of effluent quality using the existing treatment system. Also, the operational evaluation report shall include a phosphorus discharge optimization plan for the current operation. If the report concludes that the facility can achieve the final phosphorus WQBEL, the study shall contain a schedule for implementation of any improvements or other study recommendations. The implementation schedule shall be based on providing compliance with the final phosphorus WQBEL as soon as possible. Once the operational evaluation report is approved by the Department, the permittee shall take the steps called for in the operational evaluation report and optimization plan and follow the implementation schedule as approved. If the Department approved operational evaluation report concludes that the facility cannot achieve the phosphorus limit, the permittee shall initiate a Facilities Planning Study and implementation of the phosphorus discharge optimization plan for the current operation.	12/31/2017
Progress Report #1: Submit a progress report on meeting the final WQBEL for phosphorus. This report shall discuss the feasibility of watershed compliance options including Watershed Adaptive Management and water quality trading, and summarize potential partners, meetings, and other work efforts completed to investigate these options.	06/30/2018
Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department. If the plan concludes upgrading is necessary to achieve compliance with the final phosphorus WQBEL, the submittal shall include a preliminary engineering design report. If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Plan. If water quality trading will be undertaken, the submittal shall include a completed Notice of Intent to	06/30/2019

Trade Form 3400-206.	
Facility Plan : Submit a Facility Plan that evaluates feasible alternatives for meeting the final phosphorus WQBEL (water quality based effluent limit) which may include: facility upgrading, consolidation with other sewerage systems, alternative effluent discharge locations, the Watershed Adaptive Management Option, Water Quality Trading Plan or a water quality standards variance.	06/30/2020
Construction Plans and Specifications: Submit construction plans and specifications for approval if the approved Facility Plan calls for upgrading the treatment facility. Submit the final water quality trading or Adaptive Management plan if the Facility Plan calls for one of these watershed approaches.	06/30/2021
Progress Report #2: Submit a progress report on meeting the final WQBEL for phosphorus.	06/30/2022
Complete Actions: Complete actions to meet the final WQBEL for phosphorus. Comply with the new phosphorus final limits.	12/31/2022
Phosphorus WQBEL Effective: The permittee shall achieve compliance with final phosphorus WQBEL: 2.0 lbs/day expressed as a monthly average.	01/01/2023

4.2 Total Suspended Solids Compliance Schedule

Required Action	Due Date
Operational Evaluation Report: The permittee shall prepare an operational evaluation study report and submit it for Department approval. The report shall evaluate collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that would enable compliance with the final TSS WQBELs or some improved level of effluent quality using the existing treatment system. Also, the operational evaluation report shall include a TSS discharge optimization plan for the current operation. If the report concludes that the facility can achieve the final TSS WQBELs, the study shall contain a schedule for implementation of any improvements or other study recommendations. The implementation schedule shall be based on providing compliance with the final TSS WQBELs as soon as possible. Once the operational evaluation report is approved by the Department, the permittee shall take the steps called for in the operational evaluation report and optimization plan and follow the implementation schedule as approved. If the Department approved operational evaluation report concludes that the facility cannot achieve the TSS limit, the permittee shall initiate a Facilities Planning Study and implementation of the TSS discharge optimization plan for the current operation.	12/31/2017
Progress Report #1: The permittee shall submit a progress report on the final WQBELs for TSS. This report shall discuss the feasibility of watershed compliance options including Watershed Adaptive Management and water quality trading, and summarize potential partners, meetings, and other work efforts completed to investigate these options.	06/30/2018
Preliminary Compliance Alternatives Plan: The permittee shall submit a preliminary compliance alternatives plan to the Department. If the plan concludes upgrading is necessary to achieve compliance with the final TSS WQBELs, the submittal shall include a preliminary engineering design report. If the plan concludes Adaptive Management will be used, the submittal shall include a completed Watershed Adaptive Management Plan. If water quality trading will be undertaken, the submittal shall include a completed Notice of Intent to Trade Form 3400-206.	06/30/2019

Facility Plan: The permittee shall submit a Facility Plan that evaluates feasible alternatives for meeting the final TSS WQBELs which may include: facility upgrading, consolidation with other sewage systems, alternative effluent discharge locations, the Watershed Adaptive Management Option, water quality trading plan, or a water quality standards variance.	06/30/2020
Construction Plans and Specifications: Submit construction plans and specifications for approval if the approved Facility Plan calls for upgrading the treatment facility. Submit the final water quality trading or Adaptive Management plan if the Facility Plan calls for one of these watershed approaches.	06/30/2021
Progress Report #2: The permittee shall submit a progress report on meeting the final WQBELs for TSS.	06/30/2022
Complete Actions: The permittee shall complete actions to meet the final WQBELs for TSS and comply with the new TSS final limits.	12/31/2022
TSS WQBELs Effective: The permittee shall achieve compliance with final TSS WQBELs: 25 lbs/day expressed as a monthly average and 46 lbs/day expressed as a weekly average.	01/01/2023

Explanation of Compliance Schedules

Compliance schedule for temperature has been removed.

Attachments:

Dissipative Cooling Evaluation Approval

Public Notice

Proposed Expiration Date:

December 31, 2021

Justification Of Any Waivers From Permit Application Requirements

None

Prepared By:

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Date: November 25, 2020